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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte ITO TOMOYOHSI

Appeal 2009-014386
Application 10/500,461
Technology Center 2800

Before MAHSHID D. SAADAT, ALLEN R. MacDONALD, and
ROBERT E. NAPPI, *Administrative Patent Judges*.

MacDONALD, *Administrative Patent Judge*.

DECISION ON APPEAL¹

¹ The two-month time period for filing an appeal or commencing a civil action, as recited in 37 C.F.R. § 1.304, or for filing a request for rehearing, as recited in 37 C.F.R. § 41.52, begins to run from the “MAIL DATE” (paper delivery mode) or the “NOTIFICATION DATE” (electronic delivery mode) shown on the PTOL-90A cover letter attached to this decision.

STATEMENT OF CASE

Introduction

Appellant appeals under 35 U.S.C. § 134 from a final rejection of claims 7, and 10-13. Claims 1-6, 8, and 9 have been canceled. We have jurisdiction under 35 U.S.C. § 6(b).

We affirm.

Exemplary Claim

Exemplary independent claim 7 under appeal, with emphasis added, reads as follows:

7. A color moving-image holographic reproducing device comprising:

(a) a computer configured to create a computer-generated hologram from three- dimensional coordinate data of a three-dimensional object which is externally obtained;

(b) a reflective liquid crystal display connected to the computer and configured to display the-computer-generated hologram;

(c) a half mirror configured to project the displayed computer-generated hologram;

(d) three light-emitting diodes of primary colors red (R), green (G), and blue (B) (LEDs) functioning as reference light source; and

(e) *the LEDs arranged on a two dimensional grid pattern and respectively emitting primary colors of light, red (R), green (G), and blue (B), at the same time*, wherein a first LED of the R, G and B LEDs is disposed in the vicinity of a second LED in the horizontal direction and a third LED is disposed in the vicinity of the second LED in the vertical direction orthogonal to the horizontal direction;

wherein optical axes of color light beams from the LEDs are shifted from each other, the light beams are projected to the half mirror and onto the

reflective liquid crystal display, and a color holographic image is formed from the computer-generated hologram.

Rejections

1. The Examiner rejected claims 7, 10, and 11 as being unpatentable under 35 U.S.C. § 103(a) over the combination of Kato (US 5,852,504), Sekiguchi (US 5,798,864), Popovich (US 6,115,152), and Eichenlaub (US 5,410,345).

2. The Examiner rejected claim 12 and 13 as being unpatentable under 35 U.S.C. § 103(a) over the combination of Kato, Sekiguchi, Popovich, Eichenlaub, Fukagawa (US 6,510,446 B1), and Ohno (US 6,232,940 B1).

Appellant's Contentions

Appellant contends that the Examiner erred in rejecting claims 7, 10, and 11 under 35 U.S.C. § 103(a) for numerous reasons including: (1) Eichenlaub concerns stereoscopic imaging techniques and is therefore non-analogous art; (2) there is no motivation to modify Kato; (3) Eichenlaub's on and off synchronization of LEDs teaches away from the claimed invention which illuminates LEDs simultaneously; and (4) Eichenlaub's LEDs function differently than the LEDs recited in claim 7 which illuminate at the same time (App. Br. 5-11; Reply Br. 6-7 and 12-15). Appellant also contends that the combination of references fails to disclose or suggest combining LEDs with a reflection LCD and substitution of an LED for a laser is not proper (Reply Br. 4-5), Sekiguchi displays a color image sequentially by time-multiplexing as opposed to simultaneously (Reply Br. 6-8), and Kato's SLMs are linear and not in a two dimensional grid pattern (Reply Br. 9-12).

Appellant contends that the Examiner erred in rejecting claims 12 and 13 under 35 U.S.C. § 103(a) because the combination of references fail to disclose or suggest a plurality of LSIs between a computer and a reflective liquid crystal display, as recited in claim 12 (App. Br. 11-12; Reply Br. 15). Specifically, Appellant argues that Ohno's Figure 6 shows LSIs on a "side" of LCD display panel 1, which is not between the LCD display 1 and the LCD drive controller 6 (Reply Br. 15).

Issues on Appeal

Whether the Examiner has erred in rejecting claims 7 and 10-13 as being obvious?

And more specifically, whether the Examiner err in rejecting claims 7 and 10-13 as being obvious because Popovich fails to teach the limitation at issue in claim 7 of illuminating three LEDs "at the same time?"

ANALYSIS

We have reviewed the Examiner's rejections in light of Appellant's contentions in the Appeal Brief and Reply Brief that the Examiner has erred.

We disagree with Appellant's conclusions. We adopt as our own (1) the findings and reasons set forth by the Examiner in the action from which this appeal is taken and (2) the reasons set forth by the Examiner in the Examiner's Answer in response to Appellant's Appeal Brief. We concur with the conclusions reached by the Examiner.

Eichenlaub teaches full color display using three LEDs arranged in a two dimensional grid pattern (*see* Fig. 13; col. 12, ll. 26-30 and 45-63). Eichenlaub's red LED 174, green LED 176, and blue LED 177 are in the

same arrangement as shown in Appellant's Figures 12(a) and 12(b) and as recited in Appellant's claim 7.

We agree with the Examiner (Ans. 8-9) that Eichenlaub relates to full color image reproduction using light sources or LEDs of primary colors (red, green, and blue) to illuminate an LCD display with image information to provide a full color image to an observer, and is thus analogous art. We also agree with the Examiner (Ans. 4) that Kato and Popovich also relate to full color image reproduction using three primary color light sources.

Popovich teaches a holographic color image reproduction system using three primary color LEDs (*see* Figs. 19, 20(a), and 20(b); light sources 1910R, 1910G, and 1910B; LEDs 2002). Popovich provides a strong suggestion that the light sources are interchangeable, and can be implemented with LEDs, "other illumination sources, such as laser diodes, halogen lamps, incandescent lamps, induction lamps, arc lamps, or others, or combinations thereof" (col. 21, l. 67 to col. 22, l. 2).

The Examiner relies upon Popovich's Figure 19 as teaching simultaneous illumination of three LEDs (red, green, and blue) to produce a full color holographic image (Ans. 6). Appellant has not disputed this finding, or otherwise contradicted this determination in the Reply Brief. Likewise, Appellant has not convincingly shown that one of ordinary skill in the art would not have been motivated to modify Kato's display device by substituting LEDs for laser light source in order to produce "full color images for the benefit of using bright light sources with high output power and narrow bandwidth to improve image quality" as determined by the Examiner (*see* Ans. 4).

Although Appellant is correct that Eichenlaub illuminates three LEDs sequentially to produce a color image, we agree with the Examiner that there is no functional difference between Eichenlaub and the claimed invention in view of Eichenlaub's disclosure that the sequence of three individual colors (red, green, and blue) "are fused by the vision of the observer in to a color image" (col. 12, ll. 47-48). In any event, the Examiner relies on Popovich, and not Eichenlaub, as teaching simultaneous illumination of three LEDs. The Examiner relies upon Eichenlaub as teaching the two dimensional grid pattern or arrangement of the primary color LEDs.

Appellant's argument (App. Br. 9) that Eichenlaub teaches away from the claimed invention, because the LEDs are not lit at the same time, are unconvincing since the Examiner relies on Popovich as teaching the simultaneous illumination feature. Similarly, Appellant's contention (Reply Br. 6-8) that Sekiguchi uses time-multiplexing and does not illuminate three light sources at the same time, is unconvincing since the Examiner only relies on Sekiguchi as teaching a pinhole filter and collimator lens, not simultaneous illumination (and the Examiner relies upon Popovich for simultaneous illumination).

Accordingly, Appellant has not adequately shown that the Examiner erred in rejecting claims 7, 10, and 11 under 35 U.S.C. § 103(a) over the combination of Kato, Sekiguchi, Popovich, and Eichenlaub.

With regard to the rejection of claims 12 and 13, Ohno's Figure 6 shows LSI segment drivers 21, 22, and 23 located on a segment bus board 4 and connected to LCD display 1. As shown in Figure 5, segment bus boards 4 are located between LCD drive controller 6 and LCD display panel 1, and specifically are located above and below LCD panel 1, and connected with

lines 7-9, 11, and 13. As described in Ohno at column 6, lines 44-53, Figures 5 and 6 operate together to illustrate “a scheme for data transfer *between the liquid crystal drive controller 6 and the liquid crystal display panel 1*” (col. 6, ll. 44-46 (italicized emphasis added)), where the segment drivers 21-23 of Figure 5 comprise the LSIs as shown in Figure 6.

Appellant’s contentions *supra*, that neither Ohno nor the combination of references disclose or suggest a plurality of LSIs between a computer and a reflective liquid crystal display, as recited in claim 12, are unconvincing.

Accordingly, Appellant has not adequately shown that the Examiner erred in rejecting claims 12 and 13 under 35 U.S.C. § 103(a) over the combination of Kato, Sekiguchi, Popovich, Eichenlaub, Fukagawa, and Ohno.

CONCLUSIONS

(1) Appellant has not shown that the Examiner has not erred in determining that Popovich teaches or suggests illuminating three LEDs at the same time, as set forth in claim 7.

(2) The Examiner has not erred in rejecting claims 7 and 10-13 as being unpatentable under 35 U.S.C. § 103(a).

(3) Claims 7 and 10-13 are not patentable.

DECISION

The Examiner’s rejections of claims 7 and 10-13 are affirmed.

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Application 10/500,461

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a)(1)(iv).

AFFIRMED

kis

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